Pathophysiology exam questions

Fall Semester

1. **Pathophysiology of heart failure**

2. **Pathophysiology of cardiomyopathies**

3. **Pathophysiology of coronary circulation**

4. **Pathophysiology of arrhythmias**

5. **Disturbances of the regulation of respiration, the different forms of tissue hypoxia**
6. **Pathophysiology of ventilatory disorders**
   Obstructive ventilatory disorder, causes and functional characteristics: compliance, resistance, lung volumes. Restrictive ventilatory disorder, causes and functional characteristics: compliance, resistance, lung volumes. Pathophysiology of bronchial asthma.

7. **Pathophysiology of alveolar ventilation**

8. **Pathophysiology of respiratory insufficiency**

9. **Circulatory shock. Systemic reactions**

10. **Local effects of circulatory shock**

11. **Pathophysiology of essential hypertension**
    Role of heredity and environmental factors in the development of essential hypertension. Role of vasoactive mediators and changes in cardiac output in the pathophysiology of essential hypertension. Connection between obesity and hypertension.
12. **Pathogenesis and hemodynamic characteristics of the different forms of secondary hypertension**
Pathogenesis and hemodynamic characteristics of renovascular, renal parenchymal, and endocrine (Cushing’s syndrome, primary aldosteronism, acromegaly, pheochromocytoma) forms of hypertension.

13. **Disturbances of carbohydrate metabolism**

14. **Early and delayed sequelae of diabetes mellitus**
Hypoglycemic, hyperglycemic ketoacidotic, and nonketotic hyperosmolar coma. Micro- and macroangiopathies, organ manifestations.

15. **Pathogenesis of type I diabetes mellitus**
Heredity, environmental effects; pathogenetic concepts in the different stages of the disease.

16. **Pathogenesis of type II diabetes mellitus**
Heredity, environmental effects; pathogenetic concepts in the different stages of the disease.

17. **Causes of hepatic lesions**

18. **Forms of hepatic lesions**
19. **Metabolic disorders accompanying hepatic failure**

20. **Pathophysiology of starvation**

21. **Pathophysiology of obesity**
Criteria of obesity. Indexes used to estimate obesity. Types, pathogenesis and outcomes of obesity.

22. **Disturbances of protein and amino acid metabolism**

23. **Pathophysiology of vitamin metabolism. Metabolism of minerals. Nutritional diseases**

24. **Disturbances of gastric juice secretion. Peptic ulcer**

01/12/2004

Exam questions
25. **Disturbances of gastrointestinal tract motility**

26. **Malabsorption syndrome**

27. **Disorders of the exocrine pancreas function. Inflammatory and neoplastic diseases of the pancreas**

28. **General characteristics of inflammation. Role of biogen amines, lipid mediators and cytokines**
Local signs, forms, endogenous and exogenous causes of inflammation. Alterations of microcirculation. Role of histamine, serotonin, prostaglandins, leukotriens, PAF in the inflammation.

29. **Role of proteolytic systems in inflammation**
30. **Inherited and acquired disorders of chemotaxis and phagocytosis**

31. **Systemic reactions in inflammation**

32. **Immunodeficiencies: causes and sequelae. Immunosuppression**
Inherited and acquired disorders of the complement system.
Classification of congenital immunodeficiencies, causes and clinical features of the certain diseases. Acquired immunodeficiencies. Possible methods for immunosuppression.

33. **Hypersensitivity reactions**
Anaphylaxis, allergy, atopic diseases. Types of hypersensitivity reactions, syndromes caused by them, their pathomechanisms. Role of hypersensitivity reactions in autoimmune diseases.

34. **Connections between malignancies and the immune system. Immunotherapy**
Possible mechanisms of the protection of immune system against tumors. Possibilities for tumors to escape. Significance of tumorantigens. Theories of immunotherapy.

35. **Immuno-tolerance**
Humoral and cellular immunity. Natural and induced tolerance. Possible mechanisms of the development of tolerance, evidences. Significance of central and peripheral tolerance.
36. **Autoimmune processes and their pathogenetic role**

Definition of autoimmunity, autoimmune reactions without pathologic consequences. Classification of autoimmune diseases, their incidence and aggravating factors. The MHC. Forms of contribution of humoral and cellular immune system in certain autoimmune diseases. Theories concerning the development of autoimmune diseases.
Spring Semester

37. **Pathophysiology of aging**
Molecular and cellular processes of aging. Alterations in the different organs with aging. Factors influencing aging. Important diseases associated with old age.

38. **Sideropenic and siderochrestic anemias**
Causes and development of iron deficiency. Laboratory, hematological and clinical characteristics of iron deficiency anemia. Siderochrestic anemias.

39. **Megaloblastic anemias**
Role of vitamin B\textsubscript{12} and folic acid in the nucleic acid metabolism of red blood cells. Causes of B\textsubscript{12} or folic acid deficiency. Clinical symptoms of megaloblastic anemias. Polyglobulias.

40. **Hemolytic anemias**

41. **Reactive alterations in the leukocyte count. Malignancies of the bone marrow**
42. **Reactive and malignant processes of the lymphoid system.**  
Disorders of the pluripotent hemopoietic stem cell  

43. **Pathophysiology of hemorrhagic diatheses. Coagulopathies**  
Forms of hemorrhagic diatheses. Laboratory differential diagnosis. Inherited and acquired coagulopathies.

44. **Pathophysiology of thrombocytopathies and vasculopathies**  
Bleeding disorders accompanying quantitative and qualitative defects of thrombocytes, laboratory differential diagnosis. Vasculopathies.

45. **Pathophysiology of thrombophilias and thromboembolias**  
Factors predisposing for thrombosis. Congenital thrombophilias. Differences and similarities between the pathomechanism of arterial, venous and intracardiac thrombus formation. DIC. Thrombotic microangiopathies.

46. **Pathophysiology of hypertriglyceridemias and hypolipidemias**  

47. **Pathophysiology of hypercholesterolemias and lipid storage diseases**  
48. **Evolution of atherosclerosis**  

49. **Lipid theory of atherosclerosis**  
Connections between abnormal serum lipid concentrations and atherosclerosis. Possible connections between serum lipid levels and diet. Lipid theory at "cellular level".

50. **Non-lipid theories of atherosclerosis**  
Thrombogenic, mesenchymal and "response to injury" theories of atherosclerosis.

51. **Risk factors of atherosclerosis. Bases for the prevention of complications**  
Major risk factors of atherosclerosis. Possibilities for screening and concepts for prevention.

52. **Disturbances of potassium metabolism**  

53. **Acid-base disorders of respiratory origin**  

54. **Pathophysiology of the diseases with metabolic acidosis**  
55. **Pathophysiology of the diseases with metabolic alkalosis**

56. **Pathophysiology of acute parenchymal renal failure**
Pathomechanism of acute renal insufficiency of renal origin. Role of vascular and tubular factors in GFR decrease. Role of thick ascending segment in the development of acute renal failure.

57. **Pathophysiology of non-parenchymal acute renal failure**
Pathomechanism of prerenal and postrenal acute failure. Sequelae of acute renal insufficiency.

58. **Pathophysiology of chronic renal failure**

59. **Complications of chronic renal failure. Uremia**

60. **Disturbances in the function of hypophysis**

61. **Disturbances in thyroid function**
62. **Hypofunction of the adrenal cortex and medulla**  

63. **Hyperfunction of the adrenal cortex and medulla**  
Definition of Cushing's syndrome, forms with low and high ACTH concentration. Pathophysiology of Cushing's disease and ectopic ACTH syndrome. Primary and secondary hyperaldosteronism. Clinical signs and diagnostic laboratory methods of pheochromocytoma.

64. **Disturbances in female sexual function**  

65. **Disturbances in male sexual function**  
Disturbances in sexual differentiation. Precocious puberty. Forms of hypogonadism (hypophysaer, testicular, peripheral).

66. **Disturbances of calcium and phosphate metabolism.**  
**Pathophysiology of the diseases of skeleton**  

67. **Qualitative and quantitative consciousness disorders**  
68. **Pathophysiology of motor disorders**

69. **Pain**

70. **Disturbances of the autonomic nervous system**
Chronic autonomic insufficiency and acute dysautonomy. Central, peripheral and local vegetative disorders.

71. **Pathophysiology of CNS circulation**

72. **Pathophysiology of intracranial fluid spaces**
Forms and characteristics of brain edema. Consequences of brain edema. Causes, most common forms and outcomes of the alterations in cerebrospinal fluid dynamics.

73. **Disturbances of water homeostasis**
Causes and outcomes of water depletion. Decreased intake and increased excretion of water. Causes and outcomes of water retention. Increased intake and decreased excretion of water. SIADH.
74. **Disturbances of sodium homeostasis**

75. **Pathophysiology of thermoregulation**